



Continued management of impatiens downy mildew

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This factsheet expands on the information presented in the HDC Factsheet 11/09 'Impatiens downy mildew' by providing specific advice on the management of the metalaxyl-M resistant downy mildew strain.

Action points

- Where possible grow seed-raised impatiens; with the exception of New Guinea impatiens, avoid the production of cutting-raised plants.
- Monitor crops carefully for signs of the disease, provide good levels of ventilation and avoid watering plants late in the day.
- Apply a protectant fungicide programme to seed-raised crops during the production phase.
- Dispose of infected plant material into sealed bags or bins to minimise spread of the disease.



Sporulation of the metalaxyl-M resistant downy mildew strain on the underside of leaves on young seedling impatiens plants treated with metalaxyl-M

Background

Impatiens downy mildew (*Plasmopara obducens*) is a foliar disease which is specific to impatiens. It was found affecting *Impatiens walleriana* for the first time in the UK in 2003 and thereafter remained absent or at low levels before re-appearing in 2007, 2008 and again during 2011.

Initially listed as a notifiable disease, a decision was taken by Defra Plant Health to remove the need for emergency control measures and allow the industry to manage the disease in a similar manner to other downy mildew diseases of ornamentals.

As a result of HDC funded projects PC 230, 230a and 230b the industry has gained an important understanding of this disease and a wide range of potential fungicides have been examined and tested for potential control of the disease. Of the fungicides tested those containing metalaxyl-M proved to be the most effective. However, during 2011 a strain of *P. obducens* was introduced into the UK which proved difficult to control even using programmes containing metalaxyl-M. Analysis of a large number of isolates indicated that the introduced strain was resistant to metalaxyl-M.

Management and control of the disease

A number of cultural practices should be employed to prevent the disease occurring. The primary method of controlling the disease is to exclude the pathogen from nursery production. The disease has so far not been confirmed to be seed-borne, so where possible grow only seed-raised material (with the exception of New Guinea impatiens). Plants should be regularly monitored for signs of the disease and infected plants quickly disposed of into sealed bags or bins to prevent

spread. Nursery production areas should be treated with an appropriate disinfectant after the crop has been disposed of. Good levels of ventilation within production houses and air movement within the crop will help to prevent the build-up of high humidity levels and prolonged leaf surface wetness which favour development of the disease. Overhead irrigation should only be used when the leaves are likely to dry quickly.

Work undertaken in PC 230a showed that a number of fungicides were effective at controlling downy mildew when used as protectants. The most effective products contained metalaxyl-M. Other active ingredients also provided good protectant activity against infection by downy mildew, these included dimethomorph, fenamidone plus fosetyl-aluminium and mandipropamid.

The introduction of the metalaxyl-M resistant downy mildew strain during 2011 meant that fungicide programmes based around products containing metalaxyl-M would potentially no longer provide effective downy mildew control. HDC project PO

012 was commissioned to provide data on which fungicides would be most suitable for use in programmes to control downy mildew infections caused by the metalaxyl-M resistant strain of *P. obducens*. Results from both small-scale glasshouse and larger semi-commercial scale trials indicated that three products currently available provided good disease control when applied as protectants; these products were Fenomenal (via EAMU 1990/2013), Paraat (via EAMU 2585/2011) and Revus (via EAMU 0487/2012). (Please note both Paraat and Revus belong in the same fungicide group so shouldn't be alternated in the same spray programme).

Industry monitoring of the disease

During 2012 and 2013, testing of *P. obducens* isolates causing downy mildew infections was carried out to determine their metalaxyl-M sensitivity, and as a result, the persistence of the resistant strain. From the two years of monitoring, so far all infections were caused by isolates sensitive to metalaxyl-M. This suggests that the metalaxyl-M resistant strain may not have been able to persist in the UK and that metalaxyl-M may still be a viable option in combating downy mildew on impatiens.

This testing will be continued up to 2019. If the disease is found, infected plant material should be sent to *Dr Phil Jennings at The Food and Environment Research Agency, Room 02GA07, Sand Hutton, York, YO41 1LZ*. The infected top growth of the plant should be removed, wrapped in paper tissue and placed in a plastic bag. The sample should be labelled with the variety and supplier and posted to arrive between Monday and Friday so that the sample can be immediately inspected on delivery.

Further information

HDC Factsheets and publications

HDC Factsheet 11/09. 'Impatiens downy mildew'.

HDC Factsheet 05/04. 'Impatiens downy mildew'.

HDC publication 'Good Horticultural Practice for the Prevention and Control of Impatiens Downy Mildew (*Plasmopara obducens*)'.

HDC Grower summaries and reports

HDC Project PO 012: 'Evaluation of the efficacy of non-metalaxyl-M based fungicides/programmes against metalaxyl-M resistant *Plasmopara obducens*'.

HDC Project PO 011a: 'Monitoring metalaxyl-M sensitivity in impatiens downy mildew isolates from infections in 2013'.

HDC Project PO 011: 'Monitoring metalaxyl-M sensitivity in impatiens downy mildew isolates from 2012 infections'.

HDC Project PC 230b: 'Source of downy mildew (*Plasmopara obducens*) infections on impatiens'.

HDC Project PC 230a: 'Control of downy mildew (*Plasmopara obducens*) an economically important foliar disease on impatiens'.

HDC Project PC 230: 'Detection and control of downy mildew on ornamentals'.

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